NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

FOREST SITE PREPARATION

(Acre)

CODE 490

DEFINITION

Treating areas to improve site conditions for establishing a forest.

PURPOSES

- Encourage natural regeneration of desirable woody plants.
- Permit artificial establishment of woody plants.

CONDITIONS WHERE PRACTICE APPLIES

On all lands where establishment of woody plants is desired.

CRITERIA

General Criteria Applicable to All Purposes

The method, intensity and timing of site preparation will match the limitations of the site, equipment, and the requirements of the desired woody species. Use Table 1 as a guide in determining appropriate site preparation methods.

An appropriate site preparation method (mechanical, chemical and/or burning) will be chosen to protect any desirable vegetation.

Remaining slash and debris shall not create habitat for or harbor harmful levels of pests, hinder needed equipment operations or create an undue fire hazard.

Erosion and/or runoff will be controlled. Soil compaction and displacement will be minimized. Maintain necessary filter strips and/or riparian forest buffers.

All chemicals will be applied in accordance with label guidelines.

Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.

Livestock will be fenced out to prevent damage to site preparation areas and woody plants.

Additional Criteria Applicable to Natural Regeneration

Existing desirable tree sp3ecies must be present with the potential for successful natural regeneration. See practice standard TREE/SHRUB ESTABLISHMENT (612).

CONSIDERATIONS

The site preparation method should be cost effective and protect cultural resources, wildlife habitat, threatened and endangered species, water resources, and identified unique areas.

Visual quality objectives should be considered when selecting site preparation methods.

Anticipate possible off-site effects and modify the site preparation design accordingly.

Consider personnel safety during site preparation activities.

If a plow pan or compacted soils exist, use deep plowing or subsoiling to improve soil texture and promote healthy plant root systems.

For complex sites, consult a professional forester for assistance.

If chemical site preparation is used to control vegetation, the potential for surface and/or ground water contamination exists.

NRCS, Illinois

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When preparing sites in cropland fields, consider the affect that carry-over herbicide residue will have on the planted tree species.

Forest site preparation activities can impact water quality by causing a temporary increase in erosion rates and sediment yield.

PLANS AND SPECIFICATIONS

Plans will address method of site preparation, species, and protection required for desirable woody plants.

Specifications for applying this practice and protection of the site shall be prepared and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan or other acceptable documentation.

For Cropland and/or Grassland

If residue cover is less than 50% site preparation may not be needed, depending upon equipment that will be used for tree/shrub planting. Residue cover greater than 50% will require site preparation, see Table 1.

One or more of the following methods may be used:

Mechanical: Expose mineral soil. Limit tillage to no more than 2 months prior to planting or seeding. Till earlier if flooding is a possibility. Fall tillage is permissible for early spring planting. Use contour strip tilling on slopes greater than 3 percent. Planting strip widths should be greater than 3 feet in width with inter-widths of 5 feet or greater.

Chemical: Mark planting rows with durable markers and apply appropriate chemicals (see References) in 4 foot bands over projected planting rows. If slopes exceed 3 percent, apply on contour. Do not apply chemicals with 100 feet of open water or streams. Use low volatile formulations. Some chemicals need extended time to work. Consider applying chemicals in the fall or early spring prior to tree planting or direct seeding. Some sod-forming grasses may need to be mowed or tilled, allowed to regrow and then treated with the appropriate chemical to achieve a good kill.

If either a temporary or permanent cover is needed or desired after site preparation see practice standard CONSERVATION COVER (327) for recommendations specific to tree plantations.

For Forestland

Harvest any merchantable material then use one or more of the following site preparation methods:

Mechanical: Pile debris in windrows. Remove remaining cover to expose mineral soil. On slopes greater than 3 percent, operate equipment on the contour. On land that is gullied, some additional grading may be necessary.

Chemical: Mark planting rows with durable markers and apply appropriate chemicals (see References) in 4 foot bands over projected planting rows. If slopes exceed 3 percent, apply on the contour. Do not apply chemicals within 100 feet of open water or streams. Use low volatile formulations. Some chemicals need extended time to work. Consider applying chemicals in the fall or early spring prior to tree planting or direct seeding.

Prescribed Fire: Refer to practice standard PRESCRIBED BURNING (338). Obtain a Prescribed Plan (Job Sheet 338-JS). Assure that everyone planning and implementing the burn has the appropriate Job Approval Authority (See National Range and Pasture Handbook Appendix 1 and IL Amendment). To reduce surface leaf litter, burn after leaf fall in late November or early December. To control competing vegetation refer to Fire Effects Information System database, http://www.fs.fed.us/database/feis/welcome.htm. Enter the name of the plant species to be controlled to determine best time to burn.

OPERATION AND MAINTENANCE

Repair erosion control measures as necessary to ensure proper function. Access by vehicles during or after site preparation (i.e., before adequate tree and shrub establishment occurs) should be controlled to minimize erosion, compaction and other site impacts.

REFERENCES

A Guide to Bottomland Hardwood Restoration. Allen, J.A., Keeland, B.D., Stanturf, J.A., Clewell, A.F., and Kennedy, H.E., 2001. USGS Info. And Tech. Rep. USGS/BRD/ITR-2000-0011, USFS Gen.Tech. Rep. SRS-40, 132 p.

A Reference Manual for Herbicide Use in Forest and Conservation Tree Planting and Timber Stand Improvement Projects in Illinois. IL Stewardship Advisory Comm. & Univ. Of IL, 1998. http://ilvirtualforest.nres.uiuc.edu/page11.html

Chemical Weed Control in Tree Plantings. MF-656, KS Forest Service-KS St. Univ. 2001. http://www.oznet.ksu.edu/library/forst2/mf656.pdf

Forestry Handbook, Second Edition: Society of American Foresters. Ronald Press. 1984

The Role of Fire in Oak Regeneration. Van Lear, D.H. and Watt, J.M. in Oak Regeneration: Serious Problems, Practical Recommendations, USDA-FS Gen. Tech. Rep. SE-84, 1992.

Oak Plantation Establishment Using Mechanical, Burning, and Herbicide Treatments. Miller, J.H. in Oak Regeneration: Serious Problems, Practical Recommendations, USDA-FS Gen. Tech. Rep. SE-84, 1992.

Forestry and Water Quality: Pollution Control Practices. Pope, P.E. Purdue Univ. pub. FNR-88. 1993 http://www.agcom.purdue.edu/AgCom/Pubs/FNR/FNR-88.html.

Forestry Best Management Practices for Illinois. IL Dept. of Nat. Res., So. IL. Univ., Univ. of IL, & IL for. Dev. Council, 2000. http://ilvirtualforest.nres.uiuc.edu/page56.html

Table 1. Suitable site preparation guidelines. (NOTE: Specific site conditions may not allow indicated site preparation guidelines. Make appropriate adjustments)

Cover	Establishment Methods: Direct Seeding	Natural Regeneration	Seedlings
Cropland Residue level: < 50% cover	C, N	C, N	C, N
>50% cover	C, M, MC	C, M, MC	C, M, MC
Grassland	C, M, MC, CB	C, M, MC, CB	C, M, MC, CB
Forestland	C, M, MC, B, MB, CMB, H	C, M, MC, B, MB, CMB, H	C, M, MC, B, MB, CMB, H

C - Chemical
N - Not necessary
M - Mechanical
MC - Mechanical then chemical
CB - Chemical then burning
B - Burning
MB - Mechanical then burning
CMB - Chemical, then mechanical, then burning
H - Harvest cut, to increase light penetration to understory